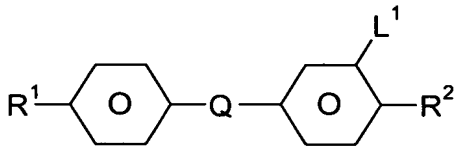
Patent Claims

1. Polymerizable, luminescent compounds of formula I



I

wherein

R^1, R^2 are independently of each other H, halogen, NO_2, CN, NCS, straight chain, branched or cyclic alkyl with 1 to 25 C-atoms wherein one or more CH_2 groups may also be replaced by -CO-, -O-, -S-, -NR^o-, -CH=CH-, -C≡C- in such a manner that O- and/or S-atoms are not linked directly to one another, and wherein one or more H-atoms may also be replaced by F or Cl, or denotes P-(Sp-X)$_n$-,

Sp is a spacer group with 1 to 20 C-atoms,

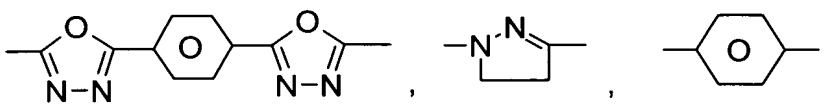
P is a polymerizable group,

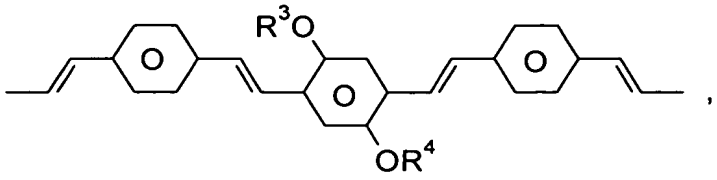
X is -O-, -S-, -CO-, -COO-, -OCO-, -CO-NR^o-, -NR^o-CO-, -NR^o- or a single bond,

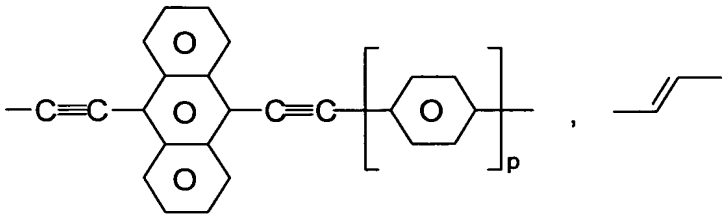
n is 0 or 1,

R^o is H or alkyl with 1 to 5 C-atoms,

Q is one of the following subformulae







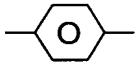
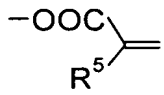
R^3, R^4 are independently of each other straight chain, branched or cyclic alkyl with 1 to 15 C-atoms wherein one or more H-atoms may also be replaced by F or Cl, or denotes P-(Sp-X)$_n$-,

p is 0 or 1,

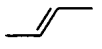
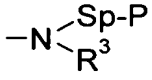
L^1 is H, F or CN

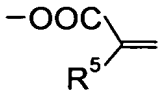
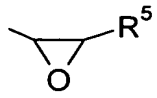
with the proviso that

a) the compounds of formula I contain one, two or more groups -(X-Sp)$_n$-P,

b) if Q denotes  , then R^1 is -O-Sp-P, R^2 is -CN, wherein P is not 

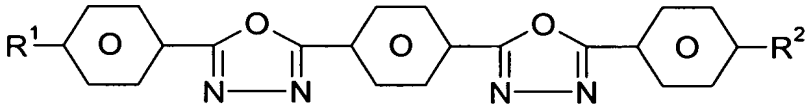
with R^5 denoting H, Cl or alkyl with 1 to 5 C-atoms,

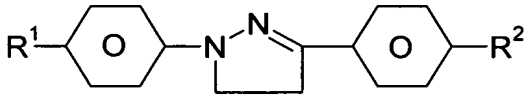
c) if Q denotes  , then R^1 is  and R^2 is -NO_2

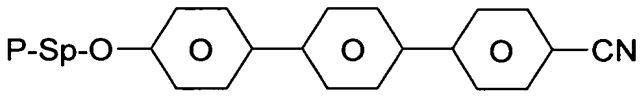
i) wherein P is not  and P is not  or

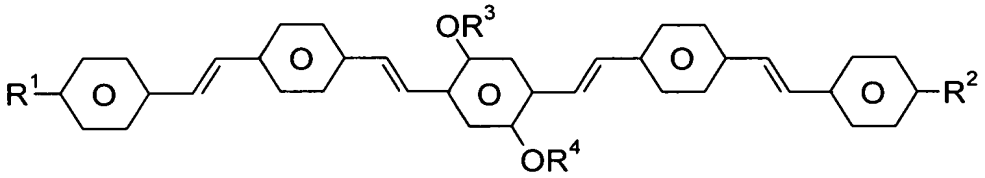
ii) L^1 is F or CN.

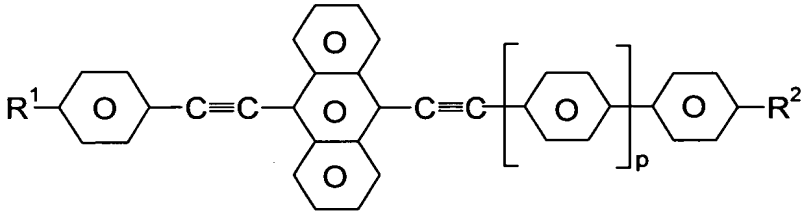
2. Compounds according to claim 1 selected from the following formulae

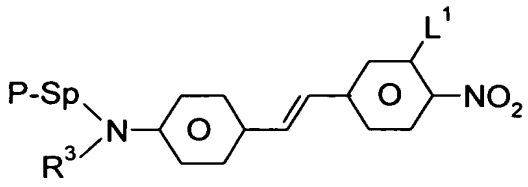
 Ia

 Ib

 Ic

 Id

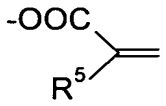
 Ie



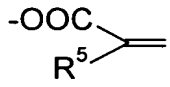
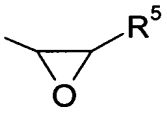
If

wherein

R^1, R^2, R^3, R^4, P, Sp, L^1 and p are defined as in claim 1 with the proviso that

a) in formula Ic P is not  wherein R^5 denotes H, Cl or alkyl with 1 to 5 C-atoms,

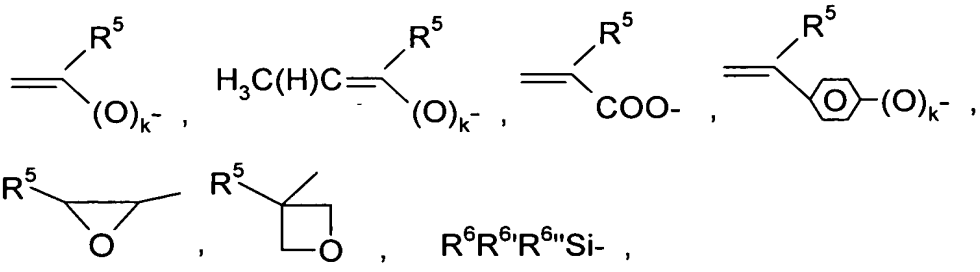
b) in formula If

i) P is not  and P is not 

wherein R^5 has the meaning given above or

ii) L^1 is F or CN.

3. Compounds according to claim 1 or 2 wherein P is selected from



wherein

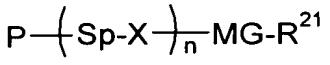
R^5 is H, Cl or alkyl with 1 to 5 C-atoms,

R^6,$R^{6'}$,$R^{6''}$ are independently of each other -Cl, -O-alkyl and/or -O-CO-alkyl with alkyl having 1 to 5 C-atoms and

k is 0 or 1.

4. Polymerizable mixture comprising at least one compound according to one of the claims 1 to 3.

5. Polymerizable mixture according to claim 4 further comprising at least one polymerizable mesogenic compound of formula II



II

wherein

P is a polymerizable group,

Sp is a spacer group having 1 to 20 C-atoms,

X is a group selected from -O-, -S-, -CO-, -COO-, -OCO-, -O-COO-, $-SO_2-O-$, $-O-SO_2-$ or a single bond,

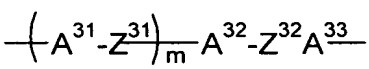
n is 0 or 1,

R^{21} is H or an alkyl radical with up to 25 C atoms which may be unsubstituted, mono- or polysubstituted by halogen or CN, it being also possible for one or more non-adjacent CH_2 groups to be replaced, in each case independently from one another, by -O-, -S-, -NH-, $-N(CH_3)-$, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-,

-CO-S- or -C≡C- in such a manner that oxygen atoms are not linked directly to one another, or alternatively R^{21} is halogen, cyano or has independently one of the meanings given for P-(Sp-X)$_n$-,

MG is a mesogenic or mesogenity supporting group.

6. Polymerizable mixture according to claim 5 wherein MG is a mesogenic or mesogenity supporting group of formula III



III

wherein

A^{31}, A^{32}, A^{33} being independently from one another 1,4-phenylene in which, in addition, one or more CH groups may be replaced by N, 1,4-cyclohexylene in which, in addition, one or two non-adjacent CH_2 groups may be replaced by O and/or S, 1,4-cyclohexenylene or naphthalene-2,6-diyl, it being possible for all these groups to be unsubstituted, mono- or polysubstituted with halogen, cyano or nitro groups or alkyl, alkoxy or alkanoyl groups having 1 to 7 C atoms wherein one or more H atoms may be substituted by F or Cl,

Z^{31}, Z^{32} being independently from one another -O-, -CO-, -COO-, -OCO-, -SO_2-O-, -O-SO_2-, -CH_2CH_2-, -OCH_2-, -CH_2O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH- or a single bond and

m being 0, 1 or 2.

7. Polymerizable mixture according to claim 4, 5 or 6 further comprising at least one polymerizable and photoorientable compound.

8. Polymerizable mixture according to claim 7 characterized in that the polymerizable and photoorientable compound is denoted by the formula IV

$$P\text{-}(Sp\text{-}X)_n\text{-}A^{41}\text{-}A^{42}\text{-}Z^4\text{-}A^{43}\text{-}A^{44}\text{-}R^{41} \qquad IV$$

wherein

P	is a polymerizable group,
Sp	is a spacer group having 1 to 20 C-atoms,
X	is a group selected from -O-, -S-, -CO-, -COO-, -OCO-, -O-COO-, $-SO_2-O-$, $-O-SO_2-$ or a single bond,
n	is 0 or 1,
A^{41}, A^{42}, A^{43}, A^{44}	are independently of each other 1,4-phenylene, wherein 1, 2, 3 or 4 H-atoms may be replaced by F or Cl,
A^{41}, A^{44}	may in addition to the above given meaning denote independently of each other a single bond,
Z^4	is -N=N-, -CH=CH- or $-(O)_{s1}-(CH_2)_{s2}-O\text{-}CO\text{-}CH=CH-$ with s1 being 0 or 1 and s2 being 0 to 6,
R^{41}	is H, halogen, NO_2, CN, SCN, straight chain, branched or cyclic alkyl with 1 to 25 C-atoms wherein one or more CH_2 groups can also be replaced by -O-, -S-, $-NR^o-$, -CH=CH-, -C≡C- in such a manner that O- and/or S-atoms are not linked directly to one another, and wherein one or more H-atoms can also be replaced by F or Cl, or denotes $P\text{-}(Sp\text{-}X)_n-$.

9. Polymer material obtainable by polymerizing a polymerizable mixture according to one of the claims 4 to 8.

10. Polymer material according to claim 9 obtainable by a process comprising the following steps

a) forming a thin layer of the polymerizable material,

b) aligning the molecules of the compounds of the mixture in the thin layer into a uniform orientation or a patterned orientation such that in each pattern the orientation is uniform,

c) polymerizing said polymerizable material.

11. Use of a compound according to one of the claims 1 to 3 or of a polymerizable mixture according to one of the claims 4 to 8 for the manufacture of photoluminescent and/or electroluminescent polymer material.

12. Use of a polymer material according to claim 9 or 10 as a photo- and/or electroluminescent material in a light emitting device, an optical or electrooptical display element.

13. Light emitting device comprising a polymer material according to claim 9 or 10 as a photo- and/or electroluminescent material.

14. Optical or electrooptical display element comprising a polymer material according to claim 9 or 10 as a photo- and/or electro-luminescent material.